ABSTRACT

HLA-A*24:07 is unique to the Indonesian population, dominated by Sundanese and Javanese. As the Caucasian population handles the most worldwide research, a little study on the HLA-A*24:07 has been undertaken. Recently, the connection of SARS-CoV-2 peptides with HLA, notably HLA-A*24:02, has been investigated. The only distinction between HLA-A*24:02 and HLA-A*24:07 is the residue position 70. No SARS-COV-2 epitope related to HLA-A*24:07 in IEDB was reported until May 19, 2022. NetMHCPan EL 4.1 and IEDB Immunogenicity web servers were utilized in this study to find 42 immunogenic epitopes strongly interacting with HLA-A*24:07. Four top epitope candidates were used to examine the presence of glutamine^{70} of the HLA-A*24:02. The glutamine^{70} was compared to histidine^{70} of the HLA-A*24:02 for binding properties assessment. The assessment showed a lower affinity of the peptide-HLA-A*24:07 complex. A slightly different complex structure was influenced by glutamine and histidine's distinct side chains. Molecular docking using HPEPDOCK and CABS-Dock webserver was carried out along with the stability assessment using CABSFLEX. The 3D visualization and the non-covalent interaction were done using the Pymol and Protein-ligand interaction profiler (PLIP). Furthermore, the ^{2167}NYMPYFFTL^{2176} and ^{1208}QYIKWPWYI^{1217} peptides become the most promiscuous epitopes for both HLAs due to their large and aromatic side chain residues that contribute to higher $CD8^+$ T cell response in the primary infection.

ACKNOWLEDGEMENT PAGE

IDENTIFICATION AND COMPARISON OF SARS-COV-2 PEPTIDES BINDING TO HLA-A*24:02 AND HLA-A*24:07

AUTHOR:

STEVANIE FAUSTINA TANGTOBING

18010195

BIOMEDICINE

ACKNOWLEDGED BY:

Thesis Advisor and Supervisor,	Thesis Supervisor,
	
Marsia Gustiananda, S.Si., Ph.D	**Dr.rer.nat. Arli Aditya Parikesit, S.Si., M.Si**

TABLE OF CONTENTS